King County's SciFYI

King County
Department of Natural Resources and Parks
Water and Land Resources Division

A digest of current natural science issues in King County | Article 0809-2 | September 2008

# Biodiversity: a new Science and Technical Support Section focus

By Jennifer Vanderhoof, Ecologist

**Biological diversity, or biodiversity, is the variety of living organisms, from genetic diversity through species, to higher taxonomic levels, which is the classification of plants and animals according to their presumed natural relationships, and includes the variety of habitats, ecosystems, and landscapes in which the species are found. A simpler definition of biodiversity is "The full range of life in all its forms" (Washington Biodiversity Council).**

As the Council's Washington Biodiversity Conservation Strategy (2007) explains, biodiversity "includes the habitats in which life occurs, the ways that species and habitats interact with each other, and the physical environment and the processes necessary for those interactions….This definition includes all species found within the state, from tiny soil microbes to towering Douglas-firs. The definition also includes the interactions that sustain each species, such as predator- prey relationships, and the physical processes on which life depends, including chemical and nutrient cycling, water filtration, and climate regulation."

## *What are a few of the most threatened species/habitats in King County?*

**Species:** Larch mountain salamander; Beller's ground beetle; California floater (mollusk); marbled murrelet; Brown rockfish

**Habitats:** Lowland old-growth forest; salt marsh; seasonal shallow freshwater ponds.

*Above: This old-growth western redcedar stump was probably logged about 100 years ago. It is now functioning as a "nurse stump" because as it decays, it provides nutrients for new young trees and shrubs to grow from.*

## Why is biodiversity important?

Biodiversity supports such diverse activities as agriculture, horticulture, selective breeding, pharmaceuticals, cosmetics, pulp and paper, water purification and waste treatment. Most recently, the value of biodiversity to climate moderation and ecosystem resilience is receiving much attention.

A few of the more studied values or benefits of biodiversity are:

- Purification of air and water
- Soil fertility
- Food, fuel, and fiber
- Stabilization and moderation of climate
- Moderation of floods, droughts, temperature extremes, and forces of wind
- Pollination of plants, including 95% of the world's crops
- Control of pests and disease
- Genetic resources for crop varieties, animal breeds, medicines

**LEVEL III AND LEVEL IV ECOREGIONS THAT LIE WITHIN KING COUNTY'S GEOGRAPHIC BOUNDARIES**

| LEVEL III | LEVEL IV |
|---|---|
| Puget Lowland | Eastern Puget Riverine Lowlands |
| | Eastern Puget Uplands |
| | Central Puget Lowland |
| North Cascades | North Cascades Lowland Forests |
| | North Cascades Highland Forests |
| | North Cascades Subalpine/Alpine |
| Cascades | Western Cascades Lowlands and Valleys |
| | Western Cascades Montane Highlands |
| | Cascade Subalpine/Alpine |

*"It is King County's goal to conserve fish and wildlife resources in the county and to maintain countywide biodiversity."*

*– King County Comprehensive Plan*

## What King County is doing

Biodiversity has emerged as the dominant worldwide conservation issue during the first decade of the 21st Century. At the request of the County Executive, King County has undertaken an effort to address the county's biodiversity by participating in an international program for conservation, known as Local Action for Biodiversity (LAB).

Successfully achieving biodiversity conservation throughout the county will require current and comprehensive information about the biodiversity of the county, the use of innovative analytical methods for determining the state of biodiversity, tools for biodiversity conservation, and a set of coherent, integrated policies that speak directly to biodiversity throughout the county.

Although this goal has been prominent in the county's comprehensive plan for several years, no strategy specific to biodiversity conservation has yet been developed.

In response to the executive's request and the LAB initiative, scientists in the Water and Land Resources Division's (WLRD) Science Section have undertaken the task of developing the first comprehensive strategy and program for conserving the plants and animals of the county. This work began in 2007 with the development of the King County Biodiversity Report, the first overall evaluation of the species, habitats, and ecosystems of the county.

Scientists in WLRD collected and evaluated numerous reports, organized data, and collated information for use in the report. The result is posted on the county's biodiversity Web site at: http://dnr.metrokc.gov/wlr/waterres/biodiversity/index.htm

The work continues through 2010 with the following elements:

- During 2008, Science Section staff members will be developing a biodiversity framework and strategy;
- In 2009 the Science Section will prepare and issue King County's biodiversity plan;
- In 2010 the Science Section, in cooperation with other King County divisions and departments, will Implement five biodiversity projects; and
- A final report will be submitted to LAB for dissemination to other participants in the program and to new members worldwide.

The biodiversity framework is already in development by the Science Section. Taking information, principles, and concepts from previous work on aquatic systems and salmon conservation and from the latest conservation science, the outline of a strategy is emerging. According to King County ecologists and prominent conservation biologists, in order to conserve the native biodiversity of King County, it will be necessary to:

- Represent, in a system of protected areas across the County, all native ecosystem types and successional stages;
- Maintain distributions and viable populations of native species;
- Maintain the ecological and evolutionary processes that are the basis for native biodiversity;
- Manage landscapes and communities (including human communities) for resilience in the face of environmental and climate change;
- Renew the ethical commitment to biodiversity; and
- Engage county citizens in this important work. ■

**TYPES OF WETLANDS IN KING COUNTY, INCLUDING QUANTITY AND AREA**

| Wetland system | Number of Wetlands | Hectares (Acres) |
|---|---|---|
| Palustrine | 836 | 5,507 (12, 556) |
| Lacustrine | 18 | 419 (956) |
| Palustrine/lacustrine | 17 | 473 (1,078) |
| Estuarine | 13 | 1,074 (2,449) |
| Marine | ~30 | ~132 (~ 300) |
| Total | 884 | 8,789 (20,039) |

**KING COUNTY ANIMAL AND PLANT SPECIES**

| Species Group | No. of Species in King County |
|---|---|
| Birds | 221 (5 are introduced) |
| Mammals | 69 (8 are introduced) |
| Amphibians | 12 (1 is introduced) |
| Reptiles | 8 (2 are introduced) |
| Freshwater Fish | 50 (20 are introduced) |
| Marine Fish in Intertidal/ Shallow Subtidal Habitat | Over 60 |
| Vascular Plants | 1249 (383 are introduced) |

## About King County's SciFYI

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**Section Manager:** Randy Shuman

**Editor:** Doug Williams

**Contributors and Photographers:** Larry Jones, Jonathan Frodge, Jo Wilhelm, Deborah Bouchard, Jennifer Vanderhoof, Ray Heller and Laurie Devereaux.

**Designer:** Laurel Preston

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**Send questions, comments and future story ideas to:**
Kate O'Laughlin - kate.olaughlin@kingcounty.gov, 206-8363 or
Jim Simmonds - jim.simmonds@kingcounty.gov, 206-1986

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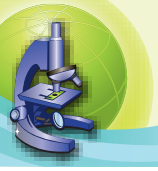

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